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CHRISTOPHER C. WINSLADE
McANDREWS, HELD & MALLOY
500 W. MADISON STREET
SUITE 3400
CHICAGO, IL 60661

EXAMINER	
MILORD, MARCEAU	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/699,019	ROFOUGARAN, AHMADREZA	
	Examiner	Art Unit	
	Marceau Milord	2682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 August 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-66* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-66* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1- 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stikvoort (US Patent No 6236847 B1) in view of Coppola (US Patent No 6020783).

Regarding claims 1-3, Stilvoort discloses a notch filter (fig. 1), comprising: a first polyphase filter (16 of fig. 1) to output a plurality of phases (col. 3, lines 6-32); and a second polyphase filter (19 of fig. 1) having an input to receive the first phase and an input to receive the first phase (col. 3, line 33- col. 4, line 31; col. 1, line 48- col. 2, line 29).

However, Stilvoort does not specifically disclose the feature of an inverted first phase having an input to receive the inverted first phase and an inverted input to receive the first phase.

On the other hand, Coppola, from the same field of endeavor, discloses a filter network having the capability of establishing multiple, tunable notch frequencies. A notch filter path is established for each notch frequency and includes a bandpass filter and inverter. A filter path for

each undesired spectrum connects to the input terminal and includes a passive RF bandpass filter at one of the different frequencies for receiving the input signal. An inverter shifts the phase of the bandpass filter output by substantially 180 degrees. A combiner connects to the output for receiving signals from the input terminal and each of the notch filter paths in parallel to produce the filtered output at the output terminal. Furthermore, a mixer combines the input signal and a signal from a variable frequency local oscillator to translate the undesired spectrum into the pass band of the bandpass filter. An inverter receives the output from the bandpass filter. A second mixer combines the frequency from the inverter and the local oscillator frequency to translate the inverted spectrum from the bandpass filter to the frequency of the undesired spectrum (col. 2, line 49- col. 3, line 44; col. 4, line 27- col. 6, line 65). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Coppola to the system of Stilvoort in order to provide a notch frequency filter that operates over a wide frequency range with optimal performance.

Regarding claim 4, Stilvoort as modified discloses a notch filter (fig. 1), wherein the first polyphase filter (16 of fig. 1) comprises a plurality of resistors and capacitors arranged in a polyphase structure to generate a zero at a particular frequency, the first polyphase filter outputting the quadrature signal when the input signal has a frequency at the particular frequency (fig. 4; col 5, lines 15-65).

Regarding claims 5-7, Stilvoort as modified discloses a notch filter (fig. 1), wherein the second polyphase filter (19 of fig. 1) comprises a plurality of resistors and capacitors arranged in a second polyphase structure to reject the quadrature signal at the particular frequency (fig. 6; col. 5, line 59- col. 7, line 14).

Regarding claim 8, Stilvoort as modified discloses a notch filter (fig. 1), wherein the first polyphase filter (16 of fig. 1) comprises first, second, third and fourth inputs adapted to receive the input signal, the input signal being differential, the first and fourth inputs being coupled together to receive a first one of the differential input signals and the second and third inputs being coupled together to receive a second one of the differential input signals fig. 4; col 5, lines 15-65).

Regarding claim 9, Stilvoort as modified discloses a notch filter (fig. 1), wherein the first polyphase filter (16 of fig. 1) further comprises a first resistor having a first end coupled to the first input, a first capacitor having a first end coupled to the first input, a second capacitor having a first end coupled to the second input and a second end coupled to a second end of the first resistor to form a first output, a second resistor having a first end coupled to the second input, a third capacitor having a first end coupled to the third input and a second end coupled to a second end of the second resistor to form a second output, a third resistor having a first end coupled to the third input, a fourth capacitor having a first end coupled to the fourth input and a second end coupled to a second end of the third resistor to form a third output, and a fourth resistor having a first end coupled to the fourth input and a second end coupled to a second end of the first capacitor to form a fourth output (figs. 5-6; col. 5, line 59- col. 7, line 14).

Claim 10 contain similar limitations addressed in claim 1, and therefore is rejected under a similar rationale.

Regarding claim 11, Stilvoort as modified discloses a notch filter (fig. 1), wherein the second polyphase filter (19 of fig. 1) comprises fifth, sixth, seventh and eighth inputs, a fifth resistor having a first end coupled to the fifth input, a fifth capacitor having a first end coupled to

the fifth input, a sixth capacitor having a first end coupled to the sixth input and a second end coupled to a second end of the fifth resistor, a sixth resistor having a first end coupled to the sixth input, a seventh capacitor having a first end coupled to the seventh input and a second end coupled to a second end of the sixth resistor, a seventh resistor having a first end coupled to the seventh input, a eighth capacitor having a first end coupled to the eighth input and a second end coupled to a second end of the seventh resistor to form a seventh output, and a eighth resistor having a first end coupled to the eighth input and a second end coupled to a second end of the first capacitor to form a eighth output, and wherein the second output of the first polyphase filter is coupled to the eighth input of the second polyphase filter and the fourth output of the first polyphase filter is coupled to the sixth input of the second polyphase filter (figs. 5-6; col. 5, line 59- col. 7, line 14).

Regarding claims 12-16, Stilvoort discloses a notch filter (fig. 1), comprising:
a first polyphase filter (16 of fig. 1) including an input, and an output having a non-inverted output (col. 3, lines 6-32); and a second polyphase filter (19 of fig. 1) having an input comprising a non-inverted, the non-inverted output of the first polyphase filter (16 of fig. 1) being coupled to the input of the second polyphase filter (19 of fig. 1) and the output of the first polyphase filter (col. 3, line 33- col. 4, line 31; col. 1, line 48- col. 2, line 29).

However, Stilvoort does not specifically disclose the feature of an inverted output of the first filter being coupled to the non-inverted input of the second filter; an inverted in phase output and an inverted quadrature output.

On the other hand, Coppola, from the same field of endeavor, discloses a filter network having the capability of establishing multiple, tunable notch frequencies. A notch filter path is

established for each notch frequency and includes a bandpass filter and inverter. A filter path for each undesired spectrum connects to the input terminal and includes a passive RF bandpass filter at one of the different frequencies for receiving the input signal. An inverter shifts the phase of the bandpass filter output by substantially 180 degrees. A combiner connects to the output for receiving signals from the input terminal and each of the notch filter paths in parallel to produce the filtered output at the output terminal. Furthermore, a mixer combines the input signal and a signal from a variable frequency local oscillator to translate the undesired spectrum into the pass band of the bandpass filter. An inverter receives the output from the bandpass filter. A second mixer combines the frequency from the inverter and the local oscillator frequency to translate the inverted spectrum from the bandpass filter to the frequency of the undesired spectrum (col. 2, line 49- col. 3, line 44; col. 4, line 27- col. 6, line 65). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Coppola to the system of Stilvoort in order to provide a notch frequency filter that operates over a wide frequency range with optimal performance.

Regarding claim 17, Stilvoort as modified discloses a notch filter (fig. 1), wherein the input to the first polyphase filter (16 of fig. 1) comprises first, second, third and fourth inputs, the first and fourth inputs being coupled together to receive the first one of the differential signals and the second and third inputs being coupled together to receive the second one of the differential input signals (fig. 4; col 5, lines 15-65).

Regarding claim 18, Stilvoort as modified discloses a notch filter (fig. 1), wherein the output of the first polyphase filter (16 of fig. 1) comprises first, second, third and fourth outputs, the first polyphase filter further comprising a first resistor having a first end coupled to the first

input, a first capacitor having a first end coupled to the first input, a second capacitor having a first end coupled to the second input and a second end coupled to a second end of the first resistor to form the first output, a second resistor having a first end coupled to the second input, a third capacitor having a first end coupled to the third input and a second end coupled to a second end of the second resistor to .form the second output, a third resistor having a first end coupled to the third input, a fourth capacitor having a first end coupled to the fourth input and a second end coupled to a second end of the third resistor to form the third output, and a fourth resistor having a first end coupled to the fourth input and a second end coupled to a second end of the first capacitor to form the fourth output, the non-inverted output of the first polyphase filter comprising the second output and the inverted output of the first polyphase circuit comprising the fourth output (figs. 5-6; col. 5, line 59- col. 7, line 14).

Regarding claim 19, Stilvoort as modified discloses a notch filter (fig. 1), wherein the input of the second polyphase filter (19 of fig. 1) comprises fifth, sixth, seventh and eighth inputs, the second polyphase filter further comprising a fifth resistor having a first end coupled to the fifth input, a fifth capacitor having a first end coupled to the fifth input, a sixth capacitor having a first end coupled to the sixth input and a second end coupled to a second end of the fifth resistor, a sixth resistor having a first end coupled to the sixth input, a seventh capacitor having a first end coupled to the seventh input and a second end coupled to a second end of the sixth resistor, a seventh resistor having a first end coupled to the seventh input, a eighth capacitor having a first end coupled to the eighth input and a second end coupled to a second end of the seventh resistor to form a seventh output, and a eighth resistor having a first end coupled to the eighth input and a second end coupled to a second end of the first capacitor to form a eighth

output, the sixth input comprising the non-inverted input to the second polyphase filter and the eighth input comprising the inverted input to the second polyphase circuit (figs. 5-6; col. 5, line 59- col. 7, line 14).

Regarding claims 31-33, 36-40, 44-45, Stilvoort discloses a circuit (fig. 1), comprising: a mixer 94 of fig. 1) having an output including a mixed signal output and an inverted mixed signal output (col. 3, lines 6-32); and a polyphase filter (16 of fig. 1) having an input including a non-inverted input coupled to the inverted mixed signal output (col. 3, line 33- col. 4, line 31; col. 1, line 48- col. 2, line 29).

However, Stilvoort does not specifically disclose the feature of an inverted input coupled to the non-inverted input mixed signal output; the mixed signal output comprising one of the in-phase and quadrature components, and the inverted mixed signal output comprising one of the inverted in-phase and inverted quadrature components.

On the other hand, Coppola et al, from the same field of endeavor, discloses a filter network having the capability of establishing multiple, tunable notch frequencies. A notch filter path is established for each notch frequency and includes a bandpass filter and inverter. A filter path for each undesired spectrum connects to the input terminal and includes a passive RF bandpass filter at one of the different frequencies for receiving the input signal. An inverter shifts the phase of the bandpass filter output by substantially 180 degrees. A combiner connects to the output for receiving signals from the input terminal and each of the notch filter paths in parallel to produce the filtered output at the output terminal. Furthermore, a mixer combines the input signal and a signal from a variable frequency local oscillator to translate the undesired spectrum into the pass band of the bandpass filter. An inverter receives the output from the bandpass filter.

A second mixer combines the frequency from the inverter and the local oscillator frequency to translate the inverted spectrum from the bandpass filter to the frequency of the undesired spectrum (col. 2, line 49- col. 3, line 44; col. 4, line 27- col. 6, line 65). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Coppola to the system of Stilvoort in order to provide a notch frequency filter that operates over a wide frequency range with optimal performance.

Regarding claim 34, Stilvoort as modified discloses a circuit (fig. 1), wherein the polyphase filter comprises an output having a notch at a particular frequency (fig. 4; col 5, lines 15-65).

Regarding claim 35, Stilvoort as modified discloses a circuit (fig. 1), wherein the polyphase filter comprises a plurality of resistors and capacitors arranged in a polyphase structure to generate a zero at the particular frequency (16 and 19 of fig. 1; col. 3, line 33- col. 4, line 31; col. 1, line 48- col. 2, line 29).

Regarding claim 41, Stilvoort as modified discloses a circuit (fig. 1), wherein the polyphase filter comprises a plurality of resistors and capacitors arranged in a polyphase structure to generate a zero at a first frequency, and the second polyphase filter comprises a plurality of second resistor and capacitors arranged in a second polyphase structure to generate a zero at a second frequency different from the first frequency (col. 3, line 33- col. 4, line 31; col. 1, line 48- col. 2, line 29).

Regarding claim 42, Stilvoort as modified discloses a circuit (fig. 1), wherein the output of the polyphase filter (16 of fig. 1) comprises a notch at the first frequency, and the second

polyphase filter (19 of fig. 1) comprises an output having a first notch at the first frequency and a second notch at the second frequency (col. 3, line 14- col. 4, line 31).

Regarding claim 43, Stilvoort as modified discloses a circuit (fig. 1), comprising a third filter having an input coupled to the output of the second polyphase filter, the third filter attenuating frequencies above a third frequency higher than the first and second frequencies (col. 3, line 40- col. 4, line 54).

Regarding claims 46-48, 52-53, Stilvoort discloses a circuit (fig. 1), comprising: a first polyphase filter (16 of fig. 1) having an output including a non-inverted output (col. 3, lines 6-32); and a second polyphase (19 of fig. 1) having an input including a non-inverted input coupled to the output of the first polyphase (16 of fig. 1) and an input coupled to the non-inverted output of the first polyphase filter (col. 3, line 33- col. 4, line 31; col. 1, line 48- col. 2, line 29).

However, Stilvoort does not specifically disclose the feature of an inverted input coupled to the non-inverted output of the first filter; and the inverted output of the first filter comprising one of the inverted in-phase and inverted quadrature components.

On the other hand, Coppola, from the same field of endeavor, discloses a filter network having the capability of establishing multiple, tunable notch frequencies. A notch filter path is established for each notch frequency and includes a bandpass filter and inverter. A filter path for each undesired spectrum connects to the input terminal and includes a passive RF bandpass filter at one of the different frequencies for receiving the input signal. An inverter shifts the phase of the bandpass filter output by substantially 180 degrees. A combiner connects to the output for receiving signals from the input terminal and each of the notch filter paths in parallel to produce the filtered output at the output terminal. Furthermore, a mixer combines the input signal and a

signal from a variable frequency local oscillator to translate the undesired spectrum into the pass band of the bandpass filter. An inverter receives the output from the bandpass filter. A second mixer combines the frequency from the inverter and the local oscillator frequency to translate the inverted spectrum from the bandpass filter to the frequency of the undesired spectrum (col. 2, line 49- col. 3, line 44; col. 4, line 27- col. 6, line 65). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Coppola to the system of Stilvoort in order to provide a notch frequency filter that operates over a wide frequency range with optimal performance.

Regarding claim 49, Stilvoort as modified discloses a circuit (fig. 1), wherein the first polyphase filter (16 of fig. 1) comprises a plurality of first resistors and capacitors arranged in a polyphase structure to generate a zero at a first frequency, and the second polyphase filter comprises a plurality of second resistor and capacitors arranged in a second polyphase structure to generate a zero at a second frequency different from the first frequency (col. 3, line 33- col. 4, line 31; col. 1, line 48- col. 2, line 29).

Regarding claim 50, Stilvoort as modified discloses a circuit (fig. 1), wherein the output of the first polyphase filter (16 of fig. 1) comprises a notch at the first frequency, and the second polyphase filter (19 of fig. 1) comprises an output having a first notch at the first frequency and a second notch at the second frequency (col. 3, line 14- col. 4, line 31).

Regarding claim 51, Stilvoort as modified discloses a circuit (fig. 1), comprising a third filter having an input coupled to the output of the second polyphase filter, the third filter attenuating frequencies above a third frequency, the third frequency being higher than the first and second frequencies (col. 3, line 40- col. 4, line 54).

Regarding claim 20, Stikvoort discloses a notch filter (fig. 1), comprising: generating means (16 of fig. 1) for generating an output signal comprising a plurality of phases of an input signal (col. 3, lines 6-32; col. 3, line 33- col. 4, line 31; col. 1, line 48- col. 2, line 29).

However, Stilvoort does not specifically disclose the feature of a notching means for notching a particular frequency of the input signal as a function of the phases.

On the other hand, Coppola, from the same field of endeavor, discloses a filter network having the capability of establishing multiple, tunable notch frequencies. A notch filter path is established for each notch frequency and includes a bandpass filter and inverter. A filter path for each undesired spectrum connects to the input terminal and includes a passive RF bandpass filter at one of the different frequencies for receiving the input signal. An inverter shifts the phase of the bandpass filter output by substantially 180 degrees. A combiner connects to the output for receiving signals from the input terminal and each of the notch filter paths in parallel to produce the filtered output at the output terminal. Furthermore, a mixer combines the input signal and a signal from a variable frequency local oscillator to translate the undesired spectrum into the pass band of the bandpass filter. An inverter receives the output from the bandpass filter. A second mixer combines the frequency from the inverter and the local oscillator frequency to translate the inverted spectrum from the bandpass filter to the frequency of the undesired spectrum (col. 2, line 49- col. 3, line 44; col. 4, line 27- col. 6, line 65). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Coppola to the system of Stilvoort in order to provide a notch frequency filter that operates over a wide frequency range with optimal performance.

Regarding claim 21, Stikvoort as modified Stikvoort discloses a notch filter (fig. 1), wherein the input signal comprises a differential signal (col. 3, lines 6-32).

Regarding claim 22, Stikvoort as modified discloses a notch filter (fig. 1), wherein the generating means (16 of fig. 1) further comprises means for generating the output signal with quadrature outputs when the input signal includes the particular frequency (col. 4, lines 1-49).

Regarding claim 23, Stikvoort as modified discloses a notch filter (fig. 1), wherein the notching means comprising means for rejecting the quadrature signal at the particular frequency (col. 2, lines 19-52; col 3, lines 14-46).

Regarding claim 24, Stikvoort as modified discloses a notch filter (fig. 1), wherein the particular frequency is an odd harmonic of the input signal (col. 3, line 34- col. 4, line 17).

Regarding claim 25, Stikvoort as modified discloses a notch filter (fig. 1), wherein the particular frequency is a third harmonic of the input signal (col. 1, line 61- col. 2, line 21; col. 3, line 34- col. 4, line17).

Regarding claim 26, Stikvoort discloses a method of notching a particular frequency of a signal (fig. 1), comprising: generating (16 of fig. 1) an output signal comprising a plurality of phases of an input signal (col. 3, lines 6-32; col. 3, line 33- col. 4, line 31; col. 1, line 48- col. 2, line 29).

However, Stilvoort does not specifically disclose the step of notching the particular frequency of the input signal as a function of the phases.

On the other hand, Coppola, from the same field of endeavor, discloses a filter network having the capability of establishing multiple, tunable notch frequencies. A notch filter path is established for each notch frequency and includes a bandpass filter and inverter. A filter path for

each undesired spectrum connects to the input terminal and includes a passive RF bandpass filter at one of the different frequencies for receiving the input signal. An inverter shifts the phase of the bandpass filter output by substantially 180 degrees. A combiner connects to the output for receiving signals from the input terminal and each of the notch filter paths in parallel to produce the filtered output at the output terminal. Furthermore, a mixer combines the input signal and a signal from a variable frequency local oscillator to translate the undesired spectrum into the pass band of the bandpass filter. An inverter receives the output from the bandpass filter. A second mixer combines the frequency from the inverter and the local oscillator frequency to translate the inverted spectrum from the bandpass filter to the frequency of the undesired spectrum (col. 2, line 49- col. 3, line 44; col. 4, line 27- col. 6, line 65). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Coppola to the system of Stilvoort in order to provide a notch frequency filter that operates over a wide frequency range with optimal performance.

Regarding claim 27, Stikvoort as modified discloses a method of notching a particular frequency of a signal (fig. 1), wherein the generation of the output signal comprises generating the output signal with quadrature outputs when the input signal includes the particular frequency (col. 4, lines 1-49).

Regarding claim 28, Stikvoort as modified discloses a method of notching a particular frequency of a signal (fig. 1), wherein the notching of the particular frequency comprises rejecting the quadrature signal at the particular frequency (col. 2, lines 19-52; col 3, lines 14-46).

Regarding claim 29, Stikvoort as modified discloses a method of notching a particular frequency of a signal (fig. 1), wherein the particular frequency is an odd harmonic of the input signal (col. 3, line 34- col. 4, line 17).

Regarding claim 30, Stikvoort as modified discloses a method of notching a particular frequency of a signal (fig. 1), wherein the particular frequency is a third harmonic of the input signal (col. 1, line 61- col. 2, line 21; col. 3, line 34- col. 4, line17).

Regarding claim 54, Stikvoort discloses a circuit (fig. 1) comprising: mixing means (4 of fig. 1) for mixing two signals and outputting a mixed signal and an inverted mixed signal (col. 3, lines 6-56; 14 of fig. 1; 16 and 19 of fig. 1; col. 3, line 33- col. 4, line 31; col. 1, line 48- col. 2, line 29).

However, Stilvoort does not specifically disclose the feature of filtering means for notching a particular frequency of the mixed signal.

On the other hand, Coppola, from the same field of endeavor, discloses a filter network having the capability of establishing multiple, tunable notch frequencies. A notch filter path is established for each notch frequency and includes a bandpass filter and inverter. A filter path for each undesired spectrum connects to the input terminal and includes a passive RF bandpass filter at one of the different frequencies for receiving the input signal. An inverter shifts the phase of the bandpass filter output by substantially 180 degrees. A combiner connects to the output for receiving signals from the input terminal and each of the notch filter paths in parallel to produce the filtered output at the output terminal. Furthermore, a mixer combines the input signal and a signal from a variable frequency local oscillator to translate the undesired spectrum into the pass band of the bandpass filter. An inverter receives the output from the bandpass filter. A second

mixer combines the frequency from the inverter and the local oscillator frequency to translate the inverted spectrum from the bandpass filter to the frequency of the undesired spectrum (col. 2, line 49- col. 3, line 44; col. 4, line 27- col. 6, line 65). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Coppola to the system of Stilvoort in order to provide a notch frequency filter that operates over a wide frequency range with optimal performance.

Regarding claim 55, Stikvoort as modified discloses a circuit (fig. 1) wherein the polyphase structure comprises means for generating a zero at the particular frequency (16 and 19 of fig. 1; col. 3, line 33- col. 4, line 31; col. 1, line 48- col. 2, line 29).

Regarding claim 56, Stikvoort as modified discloses a circuit (fig. 1) further comprising a second filtering means (14 of fig. 1) for notching a second frequency of the mixed signal using a second polyphase structure (19 of fig. 1), the second frequency being different from the first frequency (col. 4, lines 1-49).

Regarding claim 57, Stikvoort as modified discloses a circuit (fig. 1) wherein the polyphase structure (16 and 19 of fig. 1) comprises, means for generating a zero at the particular frequency, and the second polyphase structure comprises means for generating a second zero at the second frequency (col. 3, line 33- col. 4, line 31; col. 1, line 48- col. 2, line 29).

Regarding claim 58, Stikvoort as modified discloses a circuit (fig. 1) further comprising a third filtering means for attenuating frequencies above a third frequency of the mixed signal, the third frequency being higher than the particular and second frequencies (col. 3, line 40- col. 4, line 54).

Regarding claim 59, Stikvoort discloses a circuit (fig. 1), comprising: first filtering means (14 of fig. 1) for notching a first frequency of a signal using a first polyphase structure (16 of fig. 1) and second filtering means of the signal using a second polyphase structure (19 of fig. 1;col. 3, lines 7- 56; col. 4, lines 32-54).

However, Stilvoort does not specifically disclose the feature of second filtering means for notching a second frequency of the signal, the second frequency being different from the first frequency.

On the other hand, Coppola et al, from the same field of endeavor, discloses a filter network having the capability of establishing multiple, tunable notch frequencies. A notch filter path is established for each notch frequency and includes a bandpass filter and inverter. A filter path for each undesired spectrum connects to the input terminal and includes a passive RF bandpass filter at one of the different frequencies for receiving the input signal. An inverter shifts the phase of the bandpass filter output by substantially 180 degrees. A combiner connects to the output for receiving signals from the input terminal and each of the notch filter paths in parallel to produce the filtered output at the output terminal. Furthermore, a mixer combines the input signal and a signal from a variable frequency local oscillator to translate the undesired spectrum into the pass band of the bandpass filter. An inverter receives the output from the bandpass filter. A second mixer combines the frequency from the inverter and the local oscillator frequency to translate the inverted spectrum from the bandpass filter to the frequency of the undesired spectrum (col. 2, line 49- col. 3, line 44; col. 4, line 27- col. 6, line 65). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the

technique of Coppola to the system of Stilvoort in order to provide a notch frequency filter that operates over a wide frequency range with optimal performance.

Regarding claim 60, Stikvoort as modified discloses a circuit (fig. 1), wherein the first polyphase structure comprises means for generating a first zero at the first frequency, and the second polyphase structure comprises means for generating a second zero at the second frequency (col. 3, line 33- col. 4, line 31; col. 1, line 48- col. 2, line 29).

Regarding claim 61, Stikvoort as modified discloses a circuit (fig. 1), further comprising a third filtering means for attenuating frequencies above a third frequency of the signal, the third frequency being higher than the second frequency (col. 3, line 40- col. 4, line 54).

Regarding claims 62-64, Stikvoort discloses a method of filtering a signal (fig. 1) comprising notching a particular frequency of the signal using a polyphase structure (16 and 19 of fig. 1;col. 3, lines 6-51).

However, Stilvoort does not specifically disclose the step of notching a second frequency of the signal, the second frequency being different from the first frequency.

On the other hand, Coppola, from the same field of endeavor, discloses a filter network having the capability of establishing multiple, tunable notch frequencies. A notch filter path is established for each notch frequency and includes a bandpass filter and inverter. A filter path for each undesired spectrum connects to the input terminal and includes a passive RF bandpass filter at one of the different frequencies for receiving the input signal. An inverter shifts the phase of the bandpass filter output by substantially 180 degrees. A combiner connects to the output for receiving signals from the input terminal and each of the notch filter paths in parallel to produce the filtered output at the output terminal. Furthermore, a mixer combines the input signal and a

signal from a variable frequency local oscillator to translate the undesired spectrum into the pass band of the bandpass filter. An inverter receives the output from the bandpass filter. A second mixer combines the frequency from the inverter and the local oscillator frequency to translate the inverted spectrum from the bandpass filter to the frequency of the undesired spectrum (col. 2, line 49- col. 3, line 44; col. 4, line 27- col. 6, line 65). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Coppola to the system of Stilvoort in order to provide a notch frequency filter that operates over a wide frequency range with optimal performance.

Regarding claim 65, Stikvoort as modified discloses a method of filtering a signal (fig. 1) wherein the notching of the particular frequency comprises generating a zero at the particular frequency using the polyphase structure, and the notching of the second frequency comprises generating a second zero at the second frequency using the second polyphase structure (col. 3, line 33- col. 4, line 31; col. 1, line 48- col. 2, line 29).

Regarding claim 66, Stikvoort as modified discloses a method of filtering a signal (fig. 1) further comprising attenuating frequencies above a third frequency of the mixed signal, the third frequency being higher than the particular and second frequencies (col. 1, line 61- col. 2, line 21; col. 3, line 34- col. 4, line17).

Response to Arguments

3. Applicant's arguments filed on August 24, 2004 have been fully considered but they are not persuasive.

Applicant's representative argues that Stikvoort does not disclose a notch filter.

However, Coppola discloses a filter network having the capabilities of establishing multiple, tunable notch frequencies. Each notch filter path produces an output spectrum. In addition, a signal combiner combines the input signal with its desired and undesired frequency spectrum and the outputs from each notch filter path to produce an output signal in which each spectrum is attenuated (col. 3, lines 3-44; col. 4, lines 27-67).

In response to applicant' s argument that there is no suggestion to combine the references, the Examiner recognizes that references cannot be arbitrarily combined and that there must be some reason why one skilled in the art would be motivated to make the proposed combination of primary and secondary references. In re Nomiya, 184 USPQ 607 (CCPA 1975). However, there is no requirement that a motivation to make the modification be expressly articulated. The test for combining references is what the combination of disclosures taken, as a whole would suggest to one of ordinary skill in the art. In re McLaughlin, 170 USPQ 209 (CCPA 1971). References are evaluated by what they suggest to one versed in the art, rather that by their specific disclosure. In re Bozec, 163 USPQ 545 (CCPA) 1969.

The Examiner also recognizes that combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion can only establish obviousness, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See in re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation to do so found in the references themselves so that a notch frequency filter that operates over a wide frequency range with optimal performance (see Coppola, col. 2, lines 39-43).

Conclusion

4. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marceau Milord whose telephone number is 703-306-3023. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian C. Chin can be reached on 703-308-6739. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MARCEAU MILORD

Marceau Milord

Examiner

Art Unit 2682

M Milord

MARCEAU MILORD
PRIMARY EXAMINER

12-26-04